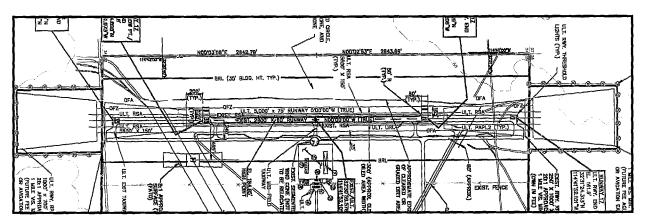


Chapter Five AIRPORT PLANS

AIRPORT PLANS





The airport master planning process has evolved through several analytic efforts, as described in the previous chapters, which were intended to analyze future aviation demand, establish airside and landside facility needs, and evaluate options for the future development of the airside and landside facilities. The planning process, thus far, has included the presentation of the Phase I Report (representing the first four chapters of the master plan) to both the Planning Advisory Committee (PAC) and the Yuma County Airport Authority (YCAA) staff. The recommended master plan concept has evolved, with the input of these individuals, into the following set of drawings. These drawings will be subsequently refined into the final layout drawings known as the Airport Layout Plans which will depict the extent of future improvements at the Airfield for the short, intermediate, and long range planning period.

AIRPORT DESIGN STANDARDS

The design and safety standards pertaining to airport facilities are based primarily upon the

characteristics of the critical design aircraft expected to use the airport. The critical design aircraft is the most demanding aircraft or "family" of aircraft which will conduct 500 or more operations (take-offs and landings) per year at the airport. FAA Advisory Circular 150/5300-13, Airport Design, is the primary reference for the design of airfield facilities. Within this advisory circular, a coding system has been established that identifies an airport's critical design aircraft. This design aircraft code, referred to as the Airport Reference Code (ARC), is a function of the critical design aircraft's approach speed and wingspan. The ARC was previously discussed in Chapter Three.

As noted in previous chapters, the current ARC for Rolle Airfield is B-I. This ARC is sufficient for the level of current activity at the Airfield, which, as described in Chapter One, consists mainly of student pilot training using mostly single engine, piston-powered aircraft performing standard training exercises (i.e., touch-and-go's, etc.). The planning forecasts analysis conducted in Chapter Two, however, suggest a potential for increased future multi-

engine and turboprop activity at the Airfield. Turboprop and multi-engine aircraft weighing more than 12,500 pounds would then be the most demanding aircraft to operate at Rolle Airfield. The majority of the piston aircraft and some turboprop and business jet aircraft meet the B-I ARC standards (approach speed greater than 91 knots but less than 121 knots and wingspans up to but not including 49 feet), however, some turboprop and business jet aircraft (i.e., Cessna Citation II and Beechcraft Super King-Air) fall within the B-II ARC (approach speed greater than 91 knots but less than 121 knots and wingspans 49 feet up to but not including 79 feet). Currently, ARC B-II aircraft operations total less than 500 annually. The Airfield, however, can expect an increase in use from aircraft within the B-II ARC during the planning period. All airfield facilities, therefore, should comply with B-II design and safety standards. Table 4A, in Chapter Four, summarized the planning standards used in the ultimate design and layout of Rolle Airfield.

MASTER PLAN CONCEPT

The recommended master plan concept provides for anticipated aviation facility needs for the San Luis and southwestern Yuma County area throughout the 20-year planning horizon. The following sections provide a brief discussion of the major improvements planned for Rolle Airfield throughout the planning period.

AIRSIDE RECOMMENDATIONS

Airside recommendations include improvements to the runway, new taxiway construction, implementation of a GPS approach, and airfield lighting. These improvements are as follows:

Runway 17-35: Extend runway to an ultimate (long term planning horizon) length of 5,000 feet and widen to 75 feet. Increase ultimate runway pavement strength rating to 30,000 pounds DWL. The runway extension could be accomplished in stages, however, its is recommended that the minimum short term planning period runway length be 3, 310 feet (510 foot initial runway extension). Other minimum short term recommendations include widening the runway to 75 feet, and increasing existing pavement strength rating form 8,000 pounds SWL to 12,500 SWL. Implement GPS approach to Runway 17.

Taxiways: Initially, for the short term planning period, construct a single, 35 foot wide mid-field taxiway to connect Runway 17-35 to the proposed aircraft parking apron terminal area. Long and recommendation is for a full length parallel taxiway and related connecting stubs. These taxiways will be designed to ARC B-II standards with regard to width and separation, as well as match the previously discussed runway pavement strength ratings of 12,500 pounds SWL for the short term planning period to 30,000 pounds DWL for the long term.

Airfield Lighting: Install medium intensity runway lighting (MIRL) along with runway threshold lighting on Runway 17-35. Initial mid-field taxiway will be served by taxiway reflectors. Long term recommendations include medium intensity taxiway lighting (MITL) for the proposed full-length parallel taxiway. Additionally, an airport rotating beacon is to be installed at or near the proposed terminal area in order to facilitate nighttime operations.

Visual Approach Aids: Install PAPI-2s (precision path approach indicators) to each end of Runway 17-35.

Airfield Pavement Markings: Reapply basic centerline and numerical designations for extended runway. Centerline and edge marking to be applied to all new taxiways. Remark existing helipad with standard FAA helipad markings. Reapply existing closed runway/taxiway markings as required.

Additional Airside Improvements: Relocate segmented circle/wind indicator from eastside to westside of Runway 17-35 (includes relocation of solar powered emergency telephone). Upgrade wind indicator to a lighted wind indicating device. Also, install supplemental lighted wind cones at or near each ultimate runway end.

LANDSIDE RECOMMENDATIONS

Landside recommendations include aircraft parking apron and tiedown area, aircraft storage hangar facilities, general aviation terminal area development, airport access roads and vehicle parking, fuel facility, an aircraft wash rack/maintenance facility, and extend or replace Airfield perimeter fencing. Details of these improvements are as follows:

Aircraft Parking Apron/Tiedown Area: Construction of an apron and tiedown area which is to be located at mid-field, and will be served by the previously discussed midfield taxiway. A total of six (6) tiedown positions are to be provided on the southside of the apron for both local and transient aircraft.

Aircraft Storage Hangar Facilities: Construct 14 unit T-Hangar facility on northside of proposed aircraft parking apron.

Reserve areas on the eastern edge of the aircraft parking apron for future conventional hangar or FBO sites.

General Aviation (GA) Terminal Facility Site: Reserve GA terminal facility site (to accommodate 820 square foot building) on the eastern edge of the aircraft parking apron.

Airport Access Roads and Vehicle Parking: Construct two (2) Airfield access roads; the first of which would traverse the Airfield property in a north-south direction adjacent on the eastern section line of Section 35; the second road would intersect the first, and be oriented east-to-west, providing access to the 1,600 square yard vehicle parking area which is to be constructed adjacent to the reserved GA terminal facility site discussed earlier.

Fuel Facility: Reserve site for future fuel facility along the eastern edge of proposed aircraft parking apron, south of the proposed GA terminal facility site.

Aircraft Wash Rack/maintenance Facility: Reserve site for aircraft wash rack/maintenance facility along the eastern edge of the proposed aircraft parking apron, south of proposed GA terminal facility site.

Airfield Perimeter Fencing: Extend existing Airfield perimeter fencing to enclose the proposed RPZ land acquisitions as well as the proposed T-Hangar and aircraft parking apron areas.

AIRPORT LAYOUT PLANS

The remainder of this chapter provides a brief description of the official layout drawings for the airport that will be submitted to the FAA and ADOT for review and approval. These plans, collectively referred to as the Airport Layout Plan Set, have been prepared to graphically depict the ultimate airfield layout, facility development, runway approach surfaces, runway protection zones, and the extent of the Airfield property. This set of plans include:

- Airport Layout Plan
- Terminal Area Plan
- Part 77 Airspace Plan
- Approach Profiles and Runway Protection Zone Plans
- Airport Property Map
- Airport Influence Area (AIA) Map

The airport layout plan set has been prepared on a computer-aided drafting (CAD) system for future ease of use and revision. This computerized plan set provides detailed information of existing and future facility layout on multiple layers that permits the user to focus in on any section of the airport at a desirable scale. The plan can be used as base information for design, and can be easily updated in the future to reflect new development and more detail concerning existing conditions (as made available through design surveys). The airport layout plan set is submitted to the FAA for approval and must reflect all future development for which federal funding is anticipated. Otherwise, the proposed development will not be eligible for federal funding. Therefore, updating these drawings to reflect changes in existing and ultimate facilities is essential.

AIRPORT LAYOUT PLAN

The Airport Layout Plan (ALP) graphically presents the existing and ultimate airport layout. Detailed airport and runway data are provided to facilitate the interpretation of the Master Plan recommendations. Both airfield

and landside improvements are depicted.

TERMINAL AREA PLAN

The Terminal Area Plan provides greater detail concerning landside improvements and at a larger scale than the ALP. The Terminal Area Plan includes details concerning all landside development east of Runway 17-35.

F.A.R. PART 77 AIRSPACE PLAN

To protect the airspace around the Airfield and approaches to each runway end from hazards that could affect the safe and efficient operation of aircraft arriving and departing the airport, Federal Aviation Regulations (FAR) Part 77, Objects Affecting Navigable Airspace, have been established for use by local authorities to control the height of objects near the airport. The Part 77 Airspace Plan included in this master plan is a graphic depiction of this regulatory criterion. The Part 77 Airspace Plan is a tool to aid local authorities in determining if proposed development could present a hazard to the airport and obstruct the approach path to a runway end. The following provides a discussion of the recommended FAR Part 77 airspace surfaces.

F.A.R. Part 77 Imaginary Surfaces

The Part 77 Airspace Plan assigns threedimensional imaginary areas to each runway. These imaginary surfaces emanate from the runway centerline and are dimensioned according to the visibility minimums associated with the approach to the runway end and size of aircraft to operate on the runway. The Part 77 imaginary surfaces include the primary surface, approach surface, transitional surface, horizontal surface, and conical surface. Part 77 imaginary surfaces are described in the following paragraphs.

Primary Surface. The primary surface is an imaginary surface longitudinally centered on the runway. The primary surface extends 200 feet beyond each runway end. The elevation of any point on the primary surface is the same as the elevation along the nearest associated point on the runway centerline. Under Part 77 regulations, the future primary surface width for Runway 17-35 is 500 feet wide (ARC B-II).

Approach Surface. An approach surface is also established for each runway end. The approach surface begins at the same width as the primary surface and extends upward and outward from the primary surface end centered along an extended runway centerline. The approach surface for the future approaches to each end of Runway 17-35 at Rolle Airfield extends 5,000 feet from the end of the primary surface at an upward slope of 20 to 1 to a width of 1,500 feet.

Transitional Surface. Each runway has a transitional surface that begins at the outside edge of the primary surface at the same elevation as the runway. The transitional surface also connects with the approach surfaces of each runway. The surface rises at a slope seven to one up to a height which is 150 feet above the highest runway elevation. At that point, the transitional surface is replaced by the horizontal surface.

Horizontal Surface. The horizontal surface is established at 150 feet above the highest elevation of the runway surface. Having no slope, the horizontal surface connects the transitional and approach surfaces to the conical surface at a distance of 5,000 feet from

the end of the primary surfaces of each runway.

Conical Surface. The conical surface begins at the outer edge of the horizontal surface. The conical surface then continues for an additional 4,000 feet horizontally at a slope of 20 to 1. Therefore, at 4,000 feet from the horizontal surface, the elevation of the conical surface is 350 feet above the highest airport elevation.

APPROACH PROFILES AND RUNWAY PROTECTION ZONES

The Approach Profiles and Runway Protection Zones depict that portion of the airspace surrounding Rolle Airfield which directly relates to each runway end's respective approach surface. Though not as comprehensive as an F.A.R. Part 77 Airspace Plan drawing, these drawings do provide an accurate profile representation of the approach surfaces of each runway end as well as a definitive plan and profile illustration of the respective runway protection zone (RPZ) for each runway end.

The Approach Profiles depict physical features such as topography, roadways, railroads, trees, etc. that are within the vicinity of each runway end and which may affect the approach surface. The dimensions and angle (approach slope) of these approach surfaces are a function of the runway service category approach classification. Runway Protection Zones, which are shown in both plan and profile on these drawings, are defined as "An area off the runway end to enhance the protection of people and property on the ground" (FAA Advisory Circular 150/5300-13 Chg. 5). Like the Approach Profiles, the Runway Protection Zones Plans

and Profiles are used to identify physical features which may affect the approach surface of each particular runway end. The dimensions and extents of each runway's approach surface were previously described under the section detailing the Part 77 Airspace Plan drawing.

Like the approach surfaces, the runway protection zones are based on approach visibility minimums (i.e., one-mile, less than 3/4-mile, etc.), and the aircraft approach category (A, B, C, D, etc.). Again, similar to the approach surfaces, the RPZs trapezoidal in shape and begin 200 feet off each runway end. The RPZ dimensions for Runway 17-35 are 500 feet (inner width) by 1,000 feet (length) by 700 feet (outer width). A portion of each of the future RPZs for Rolle Airfield, as depicted on the ALP Plan Set, extend off of existing Airfield property. As discussed in Chapter Four, the FAA recommends that positive control of these areas be obtained by Rolle Airfield, either by avigation easement or property acquisition.

AIRPORT PROPERTY MAP

The Property Map provides historical information on the acquisition and identification of all land tracts that constitute current Airfield property. The property map for Rolle Airfield reflects the Airfield both graphically and in legal terms as to its present condition.

AIRPORT INFLUENCE AREA (AIA) MAP

In 1997, the State of Arizona enacted legislation which gives governing bodies and local communities the ability to establish Airport Influence Areas (AIA) to aid in

notifying owners and potential purchasers of property that they are in an area that is subject to aircraft noise and overflight. The AIA legislation gives these entities discretion in establishing which property to include in the AIA. The Yuma County Airport Authority (YCAA) and other local authorities are required to give notice and hold hearings on their respective AIA proposals. Once an AIA is established and after public notice and hearings, the Airport Influence Area is recorded with the County Recorder.

To control the encroachment of future development on the Airfield, the YCAA, in conjunction with San Luis and other surrounding communities should consider establishing an AIA for Rolle Airfield. To be compatible with any existing or proposed local height and hazard zoning, it is recommended that an AIA for Rolle Airfield consist of the Part 77 horizontal surface. As shown on the Airport Influence Area (AIA) Map, the horizontal surface extends for a radius of 5,000 feet beyond each runway end at Rolle Airfield. At this distance, the horizontal surface encompasses all aircraft traffic patterns and the approach surfaces to each runway end.

SUMMARY

The Airport Layout Plan Set is designed to assist the YCAA in making decisions relative to future development and growth at Rolle Airfield. The plan provides for development to satisfy expected airport needs over the next twenty years and beyond. Flexibility will be a key to future development since activity may not occur exactly as forecast. The plan has considered demands that could be placed upon the Airfield even beyond the twenty-year planning period to ensure that the

facility is capable of accommodating a variety of circumstances. The F.A.R. Part 77 Airspace Plan and the Airport Influence Area (AIA) Map should be used as tools to ensure land use compatibility and restriction of the heights of future structures or antennae which could pose a potential hazard to air navigation. The Airport Layout Plan Set also provides the YCAA with options in marketing

the assets of the Airfield for community development. Following the general recommendations of the plan, the Airfield can maintain it's long term viability and continue to provide aviation services to the region.



AIRPORT LAYOUT PLAN SET

INDEX OF DRAWINGS

- 1. AIRPORT LAYOUT PLAN
- 2. TERMINAL AREA PLAN
- 3. PART 77 AIRSPACE PLAN
- 4. APPROACH PROFILES AND **RUNWAY PEOTECTION ZONES RUNWAY 17-35**
- 5. ON-AIRPORT LAND USE PLAN
- 6. AIRPORT PROPERTY MAP
- 7. AIRPORT INFLUENCE AREA (AIA) MAP



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